AF/2654
#16

PATENT
Atty. Docket: 2207/6002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant(s):	CONNELLY, J.		
Serial No.:	09/216,457	Examiner:	A. Armstrong
Filing Date:	December 18, 1998	Art Unit:	2654
Title:	Method and Apparatus for Reducing Conflicts Between Speech-Enabled Applications Sharing Menu		

APPEAL BRIEF

COMMISSIONER FOR PATENTS
Washington, DC 20231
Sir:

This is an Appeal from an Office Action dated August 14, 2002, finally rejecting each of the pending claims 3-4, 8-13, 15-16, 19, 21-49. The Notice of Appeal was filed on October 15, 2002. The period to file this Appeal Brief therefore expires on December 15, 2002.

The Commissioner is hereby authorized to charge the appeal brief fee of $320.00 to Kenyon & Kenyon Deposit Account No. 11-0600, and any additional fees which may be necessary for consideration of this Appeal.

REAL PARTY IN INTEREST

The real party in interest in this matter is Intel Corporation. *See* Assignment (recorded December 18, 1998 (at Reel 9672, Frame 0507).

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF THE CLAIMS

The application contains claims 3-4, 8-13, 15-16, 19, 21-49.

Claims 3-4, 8-11, 13, 15-16, 21-23, 25-29, and 31-49 stand rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,134,527, to Meunier et al. (Meunier) in view of U.S. Patent No. 6,052,666, to Diehl et al. (Diehl).

Claims 12, 19, 24, and 30 stand rejected under 35 U.S.C. §103(a) as unpatentable over Meunier in view of Diehl, and further in view of U.S. Patent No. 4,275,266 to Lasar.

STATUS OF THE AMENDMENTS

To date, all substantive amendments to the application have been entered.

SUMMARY OF THE INVENTION

Speech-enablment is becoming a common method of controlling electronic devices, such as computers and common consumer electronics. To control these devices, Speech-Enabled Applications ("SEA") are used. A SEA uses speech menus, which comprise a number of different sound commands (i.e. words, phrases, or tones) that a person might use to control a speech-enabled device. For example, if one was controlling a television, one sound command might be "Turn on television." Conventional speech menus are pre-programmed and professionally created prior to the consumer buying and using the device and therefore the speech menus are static, which can be both inefficient and frustrating for the consumer. In addition, if more than one device is being used, conflicts may arise between sound commands (and thus SEAs) of different devices. This lack of efficiency and inter-operability can also be a significant problem.

In response to this lack of inter-operability and problems with conflicts, the present invention provides a single combined speech menu that may be used to control multiple devices. This combined speech menu is also dynamic (and thus changeable by the consumer). Figure 1 illustrates an example of the present invention, including an apparatus 100, having a distance accuracy application 120 and a SEA 110 that controls three separate electronic devices. *See* Appendix B.

The single combined speech menu is achieved by measuring the quality of each sound command in each speech menu and then using a quality metric procedure to determine an acceptable speech command. The quality of the sound command is determined by analyzing the likelihood that one sound command of the final/combined speech menu will be incorrectly interpreted as another sound command of the final speech menu.

As illustrated by the flow chart in Figure 4, the first step 200 determines a first accuracy value of a first speech menu. *See*, Appendix C. Step 210 then adds a new sound command to the first speech menu, thus generating a second speech menu. At step 220, a second accuracy value is determined for the second speech menu. Once a second accuracy value is determined, it is compared to a standard accuracy value at step 230. At step 240, if the second accuracy value is less than the standard accuracy value, then at least one sound command from the second speech menu is replaced with another sound command and the process repeats with a new second accuracy value being determined at step 220. In the alternative, if the second accuracy value is not less than the standard accuracy value, a final speech menu is generated at step 250.

Pending claim 8, for example, captures this subject matter. It recites a distance accuracy module that is capable of comparing at least one candidate sound command for each application

to a previously-stored sound command in a speech menu that controls at least two speech-enabled applications and further is capable of installing the sound commands for each application unless the accuracy value is less than a predetermined value.

None of the cited prior art teaches or suggests this subject matter, particularly the comparing at least one candidate sound command for *each application* in a speech menu that controls *at least two speech-enabled applications*.

Additional embodiments of the present invention also include this concept of at least two applications, two devices, or predetermined audio commands.

ISSUES

The issues on appeal are:

1. Whether claims 3-4, 8-11, 13, 15-16, 21-23, 25-29, and 35-49, patentably distinguish over Meunier in view of Diehl under 35 U.S.C. §103(a); and
2. Whether claims 12, 19, 24, and 30, patentably distinguish over Meunier in view of Diehl and further in view of Lasar under 35 U.S.C. §103(a).

GROUPING OF CLAIMS

Claims 8-12 and 32-34; and 43-46 are directed to a speech-enabled apparatuses for developing a speech menu to control at least two speech-enabled applications,

Claims 13-16 and 19; and 47-48 are directed to a set of instructions residing in a storage medium.

Claims 21-25 and 3-4; and 26-31 are directed to a method of building a speech menu to control at least two devices.

Claims 35-36; and 49 are directed to a computer data signal embodied in a carrier wave to develop a speech menu for a speech-enabled application.

Claims 37-42 are directed to a method for building a speech menu from separate pre-existing speech menus.

A separate basis for patentability exists for each group of claims. However, except to the extent otherwise indicated below, the respective groups of claims do not stand or fall together for purposes of this appeal.

ARGUMENT

Meunier, Diehl, and Lasar do not render claims 3-4, 8-13, 15-16, 19, 21-49 obvious, and therefore the pending rejections should be reversed.

Claims 3-4, 8-11, 13, 15-16, 21-23, 25-29, and 31-49 Are Patentable Over Meunier In View Of Diehl

The obviousness rejections of claims 3-4, 8-11, 13, 15-16, 21-23, 25-29, and 31-49 should be reversed because 1) there is no motivation to combine the applied references, Meunier and Diehl, and 2) the references, even if combined, fail to teach or suggest all elements in the pending claims. As explained in MPEP § 2143, these two elements must be demonstrated to establish a prima facie case of obviousness.

There is no motivation to combine Meunier and Diehl

Nothing in the record provides any motivation to combine the references as the Examiner has done in her rejection. The Examiner alleged that it would have been obvious "to modify the system of Meunier to allow for voice control of multiple speech enabled applications via one

central system, as taught by Diehl, for the purpose of enhancing user friendliness." *See*, page 3 of the Office Action mailed August 14, 2002. However, this is insufficient and irrelevant.

First, the system of Meunier is not similar to the claimed invention or to Diehl. There is no suggestion within Meunier of developing a speech menu for *multiple* devices, applications, or predetermined audio commands. Similarly, Diehl does not enable control of multiple speech applications in the same way as claimed by the present invention. In Diehl, there is absolutely no teaching or suggestion of developing a *speech menu* to control multiple devices.

Meunier generally relates to training system for a speech processing system. In contrast, Diehl discloses no training at all. His disclosure instead relates to a speech processing system that during operation determines how to process ambiguous commands. These two references solve entirely different problems (training vs. operation) and there is no reason why one of ordinary skill in the art would be motivated to combine them to achieve the claimed invention. "User friendliness," would not motivate one of ordinary skill to combine references having such different goals.

Therefore, there is insufficient motivation for one of ordinary skill in the art to combine the references to achieve Appellant's claimed invention and the pending rejections should be withdrawn.

Even if one of ordinary skill in the art were to combine Meunier and Diehl, the combination still does not teach or suggest all of the elements of the claimed invention

Meunier and Diehl, even if considered in combination, do not teach or suggest comparison of speech commands from *multiple applications*.

Claims 8-11 and 32-34 stand rejected as obvious over Meunier and Diehl. The rejection must be reversed because the cited art, even if considered in combination, does not teach or suggest all elements of the pending claims. Claim 8, for example, recites:

> A speech-enabled apparatus for developing a speech menu to control at least two speech-enabled applications, comprising:
>
> a distance accuracy module capable of comparing at least one candidate sound command from *each application* to a previously-stored sound command in the speech menu to determine an accuracy value, the distance accuracy module capable of installing the sound commands for *each application* unless the accuracy value is less than a predetermined value.

The prior art does not teach or suggest this subject matter. For example, no reference discloses comparing candidate sound commands from *multiple* applications to a previously-stored sound command and installing the sound commands of *each application* unless an accuracy value determined therefrom is less than a predetermined value. As the Examiner recognized, Meunier does not disclose multiple applications, it only discloses a testing process involving vocabulary enrollment and acoustic similarity analysis. Meunier, Col. 2:46-54. In Meunier's similarity analysis, each vocabulary word is considered one word at a time in order to reduce the delay to the user in reporting out confusing words. Meunier, Col. 3:31-43.

Meunier does not teach comparison of candidate commands from *multiple applications*. Meunier, in fact, makes no reference to applications whatsoever. It certainly does not disclose comparing candidate commands from multiple applications to previously-stored sound commands and installing them on the basis of an accuracy value calculation.

Furthermore, the addition of Diehl does not supply these missing elements. Diehl does not teach or suggest the claimed apparatus for developing a speech menu from more than one

application. The Examiner does not argue otherwise. The Examiner only states that Diehl controls "multiple device speech enabled applications in a plurality of environments via pre-trained voice commands." *See* page 2 of the Office Action mailed August 14, 2002. Instead of creating a consolidated speech menu to avoid unnecessarily confusing input, Diehl proposes to prompt an operator to enter whatever spoken commands are most natural for him/her and if the command ambiguously identifies the target device, Diehl's system queries the operator for more information. *See*, Figure 1. Far from rendering the claimed invention obvious, Diehl actually teaches away from the subject matter of claim 8.

The references, even when considered in combination, fail to teach or suggest the subject matter of the pending claims. Accordingly, the Examiner's obviousness rejection to claim 8 and its dependent claims must be withdrawn.

Independent claims 21 and 26 and dependent claims 22-23, 25, and 34, and 27-29 and 31, also recite this concept of multiple applications to build a speech menu to control at least *two devices*. Similarly, in independent claim 35 and dependent claim 36, the concept is further represented in a computer data signal, which includes comparing candidate audio commands of at least two devices.

As argued above, neither reference teaches or suggests comparing candidate sound commands from *multiple* applications or *devices* to a previously-stored sound command and installing the sound commands of each application or *device* unless an accuracy value determined therefrom is less than a predetermined value. Therefore, the rejections of claims 21-23, 25, and 34 and 26-29 and 31 should be withdrawn.

Meunier and Diehl, even if considered in combination, do not teach or suggest comparison of *predetermined* speech commands

The remaining claims recite that the candidate speech commands are predetermined or pre-trained commands. Claim 13, for example, recites:

> comparing candidate sound commands *from at least two device predetermined tables* to previously-stored sound commands to determine an accuracy value therebetween.

Meunier and Diehl do not teach or suggest this subject matter either. In Meunier's system, each vocabulary word is entered through an enrollment procedure involving either a plurality of spoken commands from an individual user or a database of multiple repetitions of the same word. Meunier, Col. 3:3-17. In Diehl, a method for determining, which device in a multi-device set up is being addressed by a speaker, is disclosed. See Diehl column 2:31-49. These disclosures, even if considered collectively, are insufficient to teach or suggest the recitation of claim 13, which requires "at least two device predetermined tables." Accordingly, claims 13 and 15-16 define over the cited art.

In addition, independent claims 37, 43, 47, and 49, also all recite at least *two pre-trained or predetermined* audio commands. Therefore, these claims and their dependent claims, including 38-42, 44-46, and 48, are also allowable.

Dependent Claims 12, 19, 24, and 30 Are Allowable Over The Addition of Lasar to the Obviousness Rejection

The rejection of claims 12, 19, 24, and 30 should be withdrawn. Dependent claims 12, 19, 24, and 30 all recite that the audio command recited in the corresponding independent claims can be a tone. In rejecting these dependent claims, the Examiner cited Meunier in view of Diehl

and further in view of Lasar. However, while Lasar discloses a device that takes musical tones and converts them to digital signals/numbers, which can then be used to control a given device, it does not disclose any of the missing elements from the independent claims or motivation to combine the references discussed above.

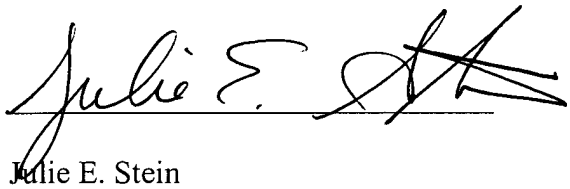
Therefore, even with the addition of Lasar, one of ordinary skill in the art would not have been motivated to achieve the claimed invention as recited in dependent claims 12, 19, 24, and 30 and thus the rejection should be withdrawn.

SUMMARY

In view of the above, the Appellants respectfully submit that all claims on appeal distinguish over the cited references. The Examiner's rejections of these claims should be reversed. The Appellants respectfully move this Board to reverse the Examiner's decision rejecting claims 3-4, 8-13, 15-16, 19, 21-49.

Respectfully submitted,

Date: 12-16-02



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Appendix A:
Claims on Appeal

(Brief of Appellants Connolley, U.S. Patent Application Serial No. 09/216,457)

3. The method according to claim 21, wherein the predetermined value is a function of at least one of the accuracy value, a predetermined threshold value and an average accuracy value, the average accuracy value being determined as a function of an average of a plurality of prior accuracy values.

4. The method according to claim 21, wherein the accuracy value is determined according to an acoustical pattern matching procedure.

8. A speech-enabled apparatus for developing a speech menu to control at least two speech-enabled applications, comprising:

a distance accuracy module capable of comparing at least one candidate sound command from each application to a previously-stored sound command in the speech menu to determine an accuracy value, the distance accuracy module capable of installing the sound commands for each application unless the accuracy value is less than a predetermined value.

9. The speech-enabled apparatus according to claim 8, wherein the speech-enabled apparatus includes a computer.

10. The speech-enabled apparatus according to claim 8, wherein the speech-enabled apparatus is coupled to at least one device using at least one of a serial connection, a parallel connection, a dedicated card connection, an internet connection and a wireless connection.

11. The speech-enabled apparatus according to claim 10, wherein the at least one device includes at least one of a computer, a stereo system, a telephone, a VCR, a home appliance control device, a cordless computer access device and a lighting system.

12. The speech-enabled apparatus according to claim 8, wherein the candidate sound commands includes at least one of a word, a phrase and at least one tone.

13. A set of instructions residing in a storage medium, the set of instructions capable of being executed by a processor to implement a development of a speech menu for a speech-enabled application, the method comprising the steps of:

a) comparing candidate sound commands from at least two device predetermined tables to previously-stored sound commands to determine an accuracy value therebetween; and

if the accuracy values each are less than a predetermined value, installing the candidate sound commands of each device in the speech menu.

15. The set of instructions according to claim 13, wherein the predetermined value is a function of at least one of the accuracy value, a predetermined threshold value and an average

accuracy value, the average accuracy value being determined as a function of an average of a plurality of prior accuracy values.

16. The set of instructions according to claim 13, wherein the accuracy value is determined using an acoustical pattern matching procedure.

19. The set of instructions according to claim 13, wherein the candidate sound command includes at least one of a word, a phrase and at least one tone.

21. A method of building a speech menu to control at least two devices, comprising:

identifying at least two devices, each device having at least one candidate audio command associated with it,

comparing each of the candidate audio commands of each device with previously registered audio commands to develop an accuracy value, and

adding to the speech menu those candidate audio commands for which associated accuracy values exceed a predetermined value.

22. The method of claim 21, further comprising installing a new execution command in association with any stored candidate audio commands.

23. The method of claim 21, wherein the candidate audio command is speech.

24. The method of claim 21, wherein the candidate audio command is a tone.

25. The method of claim 21, wherein the comparing and adding occur automatically, without user intervention.

26. A method of building a speech menu to control at least two devices, comprising:

comparing at least one candidate audio command from each device with each audio command previously installed in the speech menu to develop an accuracy value, and

installing the candidate audio commands in the speech menu if each of the accuracy values exceeds a predetermined value.

27. The method of claim 26, further comprising installing an execution command in association with the candidate audio command.

28. The method of claim 26, wherein the candidate audio command is one of a plurality of candidate audio commands defined in a table associated with the execution command.

29. The method of claim 26, wherein the candidate audio command is speech.

30. The method of claim 26, wherein the candidate audio command is a tone.

31. The method of claim 26, wherein the comparing and installing occur automatically, without user intervention

32. The speech-enabled apparatus of claim 8, wherein any one of the candidate audio commands is one of a plurality of candidate audio commands defined in a table associated with an execution command.

33. The speech-enabled apparatus of claim 8 further capable of installing an execution command in association with a candidate audio command.

34. The speech-enabled apparatus of claim 8, wherein the apparatus operates automatically without intervention

35. A computer data signal embodied in a carrier wave to develop a speech menu for a speech-enabled application, the computer data signal comprising:

a) a comparison source code segment comparing, candidate audio commands of at least two devices with previously registered audio commands to develop accuracy values, and

b) an installation source code segment installing the candidate audio commands in the speech menu if each of the accuracy values associated with the respective candidate audio command exceeds a predetermined value.

36. The signal of claim 35, wherein the comparison source code segment and the installation source code segment, when executed, operate automatically without user intervention.

37. A method for building a speech menu from separate pre-existing speech menus, comprising:

determining a similarity of at least two predetermined and pre-trained audio commands from the pre-existing speech menus by comparing each audio command to the others, to determine an accuracy value; and

combining each of the at least two audio commands in a final speech menu, wherein the accuracy value for each audio command is greater than or equal to a predetermined value.

38. The method of claim 37, wherein the predetermined value is a function of at least one of the accuracy value, a predetermine threshold value and an average accuracy value, the average accuracy value being determined as a function of an average of a plurality of prior accuracy values.

39. The method of claim 37, wherein each accuracy value is determined according to an acoustical matching procedure.

40. The method of claim 37, wherein an execution command is associated with any audio command in the final speech menu.

41. The method of claim 37, wherein the candidate audio commands are selected from speech, tones, or combinations thereof.

42. The method of claim 37, wherein the determining and combining occur automatically, without user intervention.

43. A speech-enabled apparatus comprising:

a distance accuracy module capable of determining the similarity of at least two pre-trained audio commands, each pre-trained audio command being selected from a pre-existing speech menu, and capable of installing each pre-trained audio command into a final speech menu unless an accuracy value for each audio command is less than a predetermined value.

44. The speech-enabled apparatus according to claim 43, wherein the speech-enabled apparatus includes a computer.

45. The speech-enabled apparatus according to claim 43, wherein the speech-enabled apparatus is coupled to at least one device using at least one of a serial connection, a parallel connection, a dedicated card connection, an internet connection, a wireless connection, or combinations thereof.

46. The speech-enabled apparatus according to claim 43, wherein the at least one device includes at least one of a computer, a stereo system, a telephone, a VCR, a home appliance control device, a cordless computer access device, a lighting system, or combinations thereof.

47. A set of instructions residing in a storage medium, the set of instructions capable of being executed by a processor to implement development of a speech menu, the method comprising the steps of:

a) determining a similarity of at least two pre-trained audio commands from pre-existing speech menus by comparing each audio command to the others to determine an accuracy value for each audio; and

b) combining each of the at least two audio commands in a final speech menu, wherein the accuracy value for each audio command is greater than or equal to a predetermined value.

48. The set of instructions according to claim 47, wherein the predetermined value is a function of at least one of the accuracy value, a predetermined threshold value and an average accuracy value, the average accuracy value being determined as a function of an average of a plurality of prior accuracy values.

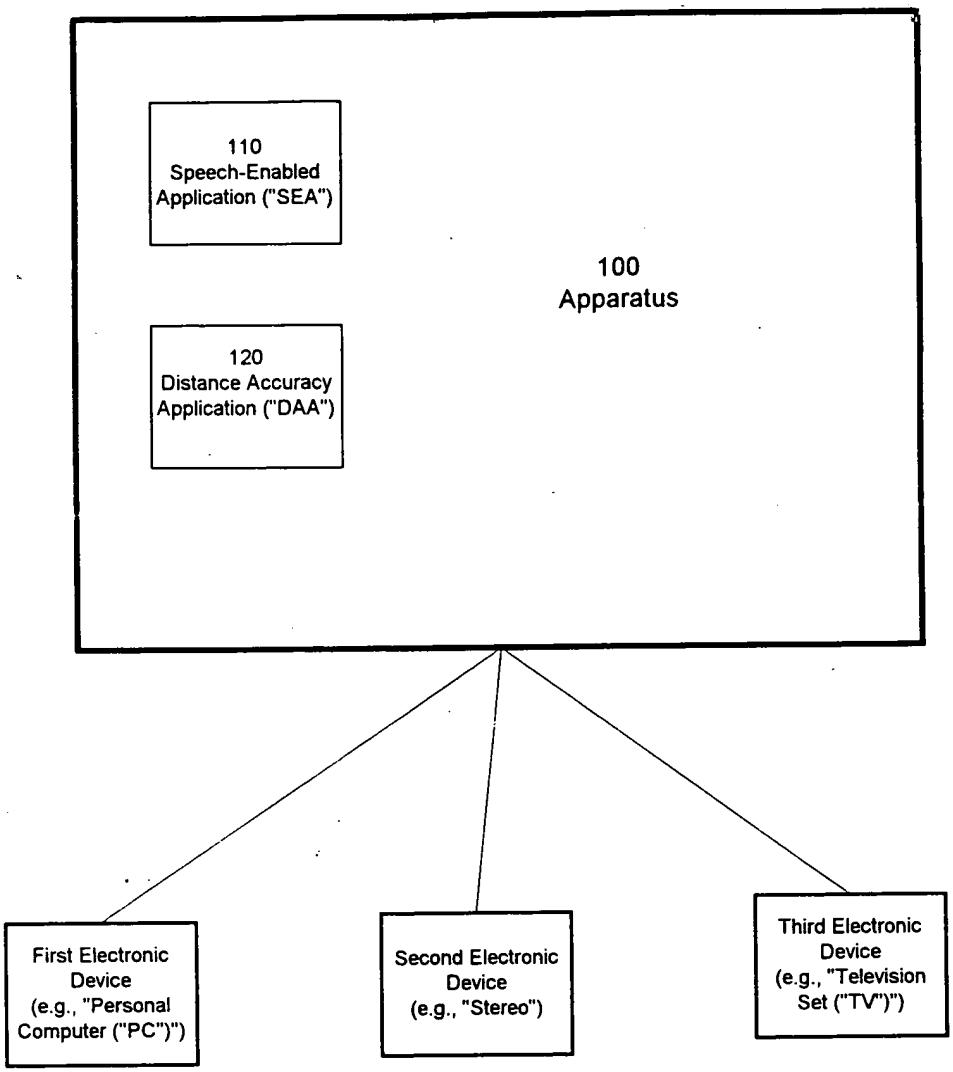
49. A computer data signal embodied in a carrier wave to develop a speech menu, the computer data signal comprising:

a) a determining source code segment comparing at least two pre-trained audio commands from pre-existing speech menus, to determine the similarity between the audio commands, and

b) a combining source code segment installing the candidate audio commands in a final speech menu if an accuracy value for each audio command exceeds or meets a predetermined value.

APPENDIX B

Figure 1



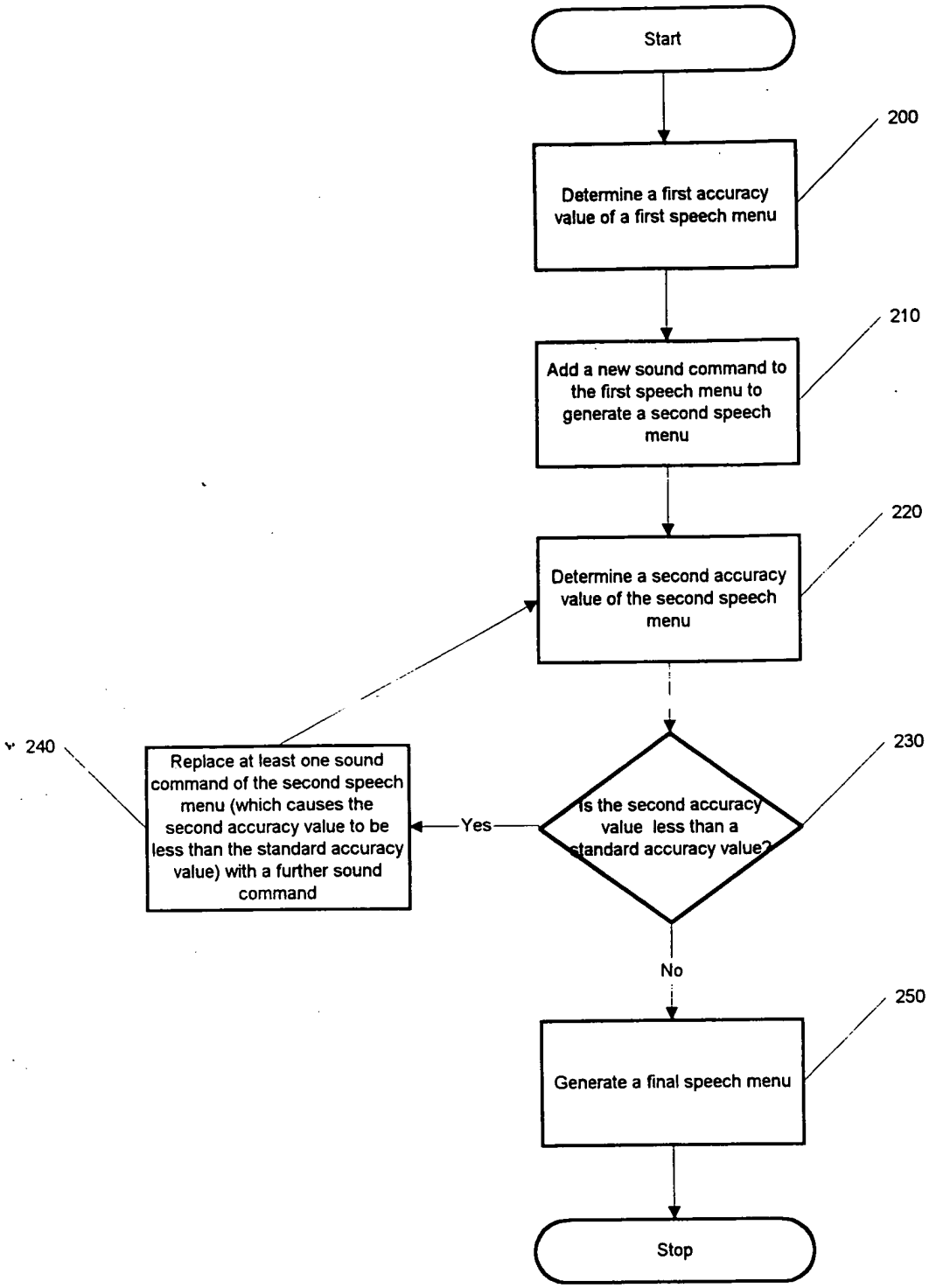

Start
200
Determine a first accuracy value of a first speech menu
210
Add a new sound command to the first speech menu to generate a second speech menu
220
Determine a second accuracy value of the second speech menu
230
Is the second accuracy value less than a standard accuracy value?
Yes
240
Replace at least one sound command of the second speech menu (which causes the second accuracy value to be less than the standard accuracy value) with a further sound command
No
250
Generate a final speech menu
Stop

Figure 4